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ABSTRACT

The Centre for Advancement of Teaching at Macquarie University in Australia serves as an agency through which the University makes a contribution to increasing the effectiveness of teaching and learning at all levels: primary, secondary, and tertiary. To this end the Centre seeks to develop cooperation with the academic staff of the University, with teachers in primary and secondary schools, and with appropriate officers of the State Departments of Education and of Technical Education and of other appropriate agencies. The activities of the Centre include: (1) research into curriculum construction and teaching procedures at all levels; (2) the preparation of teaching materials of high quality; (3) the provision for teachers of the opportunity to extend their knowledge of the content and methodology of the subjects they teach; (4) contributions to the pre-service training of teachers; and (5) the dissemination of information on these matters that is available from other agencies in Australia and overseas. This report summarizes some of the achievements and activities of the Centre from January 1967 to June 1969, including the establishment of the new audiovisual centre. (Author/PG)

ED 091975

Macquarie University

Centre for Advancement of Teaching

A REPORT OF THE FIRST THIRTY MONTHS :
JANUARY 1967 TO JUNE 1969

POLICIES AND ACTIVITIES

* *

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Centre for Advancement of Teaching

THE FIRST THIRTY MONTHS : JANUARY 1967 TO JUNE 1969

POLICIES AND ACTIVITIES

A Report to the University

Introduction

In November 1965 the University published the following advertisement :

> "The University has decided to establish the 'Macquarie University Centre for the Advancement of Teaching' and to invite the applications for the position of Director.
>
> The Centre will serve as an agency through which the University can make a contribution to increasing the effectiveness of teaching and learning at all levels: primary, secondary and tertiary. To this end the Centre will seek to develop co-operation with the academic staff of the University, with teachers in primary and secondary schools, and with appropriate officers of the State Departments of Education and of Technical Education and of other appropriate agencies.
>
> The activities of the Centre will include:
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> (i) research into curriculum construction and teaching procedures at all levels;
>
> (ii) the preparation of teaching materials of high quality;
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> (iii) the provision for teachers of the opportunity to extend their knowledge of the content and methodology of the subjects they teach;
>
> (iv) contributions to the pre-service training of teachers;
>
> (v) the dissemination of information on these matters which is available from other agencies in Australia and overseas.
>
> ....."

Since appointment as Director in January 1967 I have attempted to initiate programmes which contribute to these objectives and which

reflect the activities specified.

The Director of a Centre with such comprehensive and yet diverse objectives is faced initially with a major decision. Realising that in the first two or three years he may well be the only 'academic' on the Centre's staff, this decision is made especially difficult. He must decide whether to choose only one small aspect of the specified work of the Centre and develop that to a high level; or to attempt, in some small way, to begin many of the activities, doing none of them intensively.

I compromised on this decision in the following way. In 1967 there was an obvious and immediate need in the University for the development of an audio-visual unit. After discussions with the Deputy Vice-Chancellor, the Director of Part-Time Studies and other interested staff, I accepted the responsibility of developing, within C.A.T., an audio-visual unit for the University. This, then, was to be the one aspect that would be developed in depth, and from 1967 to 1969 would be the major task of the Centre. In order, however, to have a broader image for the Centre, and to gain experience for later determination of policy and priorities, I decided to develop as many other activities of the Centre as possible, realising that none could be fully developed. This task has been demanding but very worth while and the Centre, after its first thirty months, is now at a stage when it has a favourable image outside the University and can rationally establish priorities for the future. Without the broad experience of the first thirty months these priorities could have been established only arbitrarily.

This report summarises some of the achievements and activities of the Centre from January 1967 to June 1969. It indicates that the main task has been completed. An audio-visual unit has been established and it is a unit that I trust the University will view as efficient and productive. The broad range of other activities is also reported.

The Centre, in June 1969, has reached a critical point in its development. The broad activities of 1967 to 1969 have provided experience required to determine future policy and priorities. Proposals for the development of the Centre in the next three to six years are now to be determined.

G.R. Meyer,
Director.

AUDIO VISUAL UNIT

Since January 1967 there has been a considerable development in staff and facilities for producing audio visual aids. Production has steadily increased until now (June 1969) thousands of individual aids are produced each month.

Photography

The photographer-in-charge, Mr. Robert Taylor, was appointed in July 1967. At that time the Centre was located in a small cottage on campus and only a modest beginning could be made on the production of photographic materials.

In the first six months of 1967 two cameras, some basic lenses and a Reprovit copying machine were purchased and the Centre was able to give a minimum service for producing black and white photographs and slides from original sources or copied from books.

With the generous co-operation of Professor Alan Voisey, an enclosed room in the School of Earth Sciences was made available to C.A.T. as a darkroom. Mr. Taylor generously lent the University certain of his personal equipment for the basic processing of films.

At this time we had a great deal of assistance from Mr. K. Clifford of the Department of Illustration of Sydney University who made his department available for more elaborate film processing, such as colour printing. We gratefully acknowledge this co-operation and thank Mr. Clifford for his personal interest and help.

In March 1968 the Centre moved into two floors of Block C of Building W6, and of the 8,000 or so square feet for C.A.T., 2,000 square feet were made available for photography. The rooms consist of a studio, photographic workroom and two darkrooms. The main items of photographic equipment were also purchased at this time, including expensive capital items such as rotary colour printer, rotary glazer washing drum, enlargers, mounting press, lights and extra camera bodies.

The staff was also increased. A photographic assistant, Mr. Gregory Heath was appointed in March and a junior typist, Miss Pamela Noble in April, the latter to help with the very considerable volume of clerical work associated with ordering and developing photographs. Early in 1968, Kodak gave the Centre an Eastman Kodak Super 8 camera, and this generous gesture is

gratefully acknowledged.

In 1969, a limited budget enabled the purchase of only one piece of equipment, a 16 mm movie camera and lens. In April another photographic assistant was appointed, Mrs. Colleen Anderson.

By June 1969, the Centre had facilities and staff for the production of black and white and colour slides, black and white and colour duplicates, black and white prints up to 4' x 3', mounting up to 4' x 3', colour prints, 16 mm black and white and colour movies and Super 8 colour movies.

The work completed in the first six months of 1969 was double that undertaken in the same period in 1968. The following list gives the approximate numbers of photographic aids produced during the Centre's first thirty months, most in the twelve months June 1968 to June 1969.

Black and white slides	12,000
Colour slides	6,000
Black and white prints	15,000
Colour prints	50
16 mm movies	7
Super 8 colour movies	1

Almost all Schools and Sections of the University have used this service.

During 1969 there has been an increased number of requests for 'location' work, particularly involving Macquarie students working in industry, at such places as Smith, Cline & French and Union Carbide. In addition, our photographers have attended field excursions to Tasmania and the north and south coasts of New South Wales. There have also been several visits to schools to record various educational techniques.

The photographic department also sponsors a Camera Club for interested members of staff.

Art

No artist was appointed until Miss Betty Thorn joined the staff in April 1968. Until then only a few pieces of basic equipment were bought and essential art work was undertaken by the photographer, Mr. Taylor.

Since April 1968, Miss Thorn has organised an efficient

art unit. An art room was set up in May 1968 equipped with basic furniture, and drafting and drawing apparatus.

The demand for finished art work has greatly increased since May 1968 and the service can now prepare drawings, graphs, sketches, diagrams, charts and lettered signs and posters. Work can be photographed, printed, made into overhead projector transparencies or just displayed as finished art work. Work for displays has recently increased and this change in emphasis will require more elaborate facilities than are available at present.

Increased ordering for art required an increase in staff. In March 1969 an assistant, Miss Irene Ahrens was appointed, and in June 1969, Miss Gail Saunders joined the Centre as a secondment from the School of Biological Sciences especially to produce large quantities of art work required by that School.

Art production is of necessity a slow creative process but nevertheless over 600 pieces of finished art for use by almost all Schools and Sections of the University have been produced since May 1968.

The Schools and Sections placing the greatest number of orders are Biological Sciences, Behavioural Sciences, Education and the C.A.T. itself.

Overhead Projector Transparencies

The University has encouraged staff to use overhead transparencies by providing projectors in all theatres and some classrooms. During 1967 and 1968 C.A.T. had limited facilities to help staff in making transparencies or in learning to use the projectors. Since January 1969, however, special attention has been given to this aspect. A new unit has been established. A room in C.A.T. has been equipped with two copying machines, an overhead projector and screen, and with displays of techniques. Literature on overhead projection, including a pamphlet produced by C.A.T., is available, and there are various collections of commercial 'originals' from which transparencies can be made. Trained staff are available to produce transparencies. The Centre has also given three general lectures for members of staff on the techniques of overhead projection. These developments have increased the use of C.A.T 's services for production of high quality overhead transparencies. Since January 1969, 500 such transparencies have been made in the new unit, and almost all Schools of the University have used this service.

Projection Services

Since January 1967 C.A.T. has accepted the responsibility of organising and servicing projection equipment in the University theatres and classrooms, and of providing a projection service for members of staff.

In 1967, apart from equipment in fixed locations, C.A.T. acquired a collection of slide and movie projectors to lend to staff, and this collection was augmented in 1968 and 1969. In 1967 and for most of 1968, projection for staff was undertaken by C.A.T. attendants and the service was unsatisfactory. The first qualified projectionist, Mr. Norman Waddy, was appointed in October 1968, and additional work in the new lecture theatres of Building W5 made it necessary to appoint a second projectionist, Mr. Charles Richards, in March 1969.

As an example of the term-time requirements for projection services the following table gives the numbers of hours of projection services provided by C.A.T. staff for three months in 1969. For about one-third of this time both projectionists were required at the same time.

	Hours of Screenings : March, April and May 1969	
Schools and Sections	Movies	Slides
Behavioural Science	1	15
Biological Sciences	4	19
Chemistry	34	8
Earth Sciences	23	49
Economic and Financial Studies	-	-
Education	9	13
English Studies	-	6
Historical, Philosophical & Political Studies	8	5
Mathematics and Physics	1	29
Modern Languages	-	-
C.A.T.	18	-
Architect-Planner	-	11
Administration and Student Activities	21	7
TOTALS	119	162

That is about 24 hours of projection service were provided each week in first term 1969.

The projectionists also service and maintain equipment, organise loans of equipment to members of staff, help in the photographic and overhead transparency production units of C.A.T., and offer training courses in movie and slide projection.

Audio Production

C.A.T. had no facilities for audio production in 1967, but with the valuable assistance of Mr. Dunton of Part-Time Studies, an audio production studio was designed and established in C.A.T. in April 1968 to specifications supplied by Mr. Dunton. In May 1968, the first audio technician Mr. H. Newton, was appointed. His task in 1968 was extremely difficult because the limited budget prevented purchase of essential tapes, recorders, duplication and supporting service equipment. Immediate production of tapes was required, especially by Part-Time Studies and this was provided only by using borrowed equipment. We especially acknowledge the assistance of the School of Modern Languages in making available the audio resources of the Language Laboratories. From June 1968, however, the School of Modern Languages itself, was without audio technicians and C.A.T. took over audio productions required by the Language Laboratory until a new technician was appointed by Modern Languages in late 1968.

Since January 1969 the audio production service has provided the following services:

studio to tape recordings

special or general lectures and seminars recorded to tape from theatres or classrooms

recordings of conferences

dubbing of tapes from master tapes or discs

cassette tape copying

production of complete audio programmes

musical programmes recorded or dubbed (limited facilities only)

advisory service on audio problems

The major task is the recording and duplication of lectures for distribution to external students by the Department of Part-Time Studies. This task greatly increased in 1969 and an audio assistant, Miss Barbara Tanswell, was appointed in March 1969, to work full-time on making duplicates

from master recordings. This service was possibly only after the purchase in April 1969 of a Rola High Speed Tape Duplicator, capable of producing 1,000 tape duplicates per week. This machine has been located in a new unit. It is a room of C A T. in which staff from Part-Time Studies work together with the audio assistant in the duplication of tapes. The room functions, therefore, as a tape copying centre and a packaging and despatching unit. The room has been operating at full strength only since April 1969.

The demand for recordings of lectures has been met by the purchase in 1969 of three mobile recording units and the strategic location of these in various parts of the University. Work is commencing on linking various classrooms and lecture theatres by audio-line to the C.A.T. Audio Studio. When this system is complete it will be possible to record lectures directly from classrooms to studio.

Since the appointment of Mr. Newton, from May to December 1968, C A T produced 177 master tapes and 3763 duplicates. Since January 1969, the audio unit has made 243 masters and 8592 duplicates.

Summary of Audio Visual Production

The rate of production of audio visual aids and the need for audio visual services varies from month to month. As an example of this, the over-all production and services by C.A.T. in this field for the six months January to June 1969 are tabulated below.

Audio Visual Production January to June 1969

Production	Jan.	Feb.	Mar.	Apr.	May	June
B & W - Prints	850	700	320	600	240	200
Slides	500	340	400	130	410	830
Movies 16 mm S.8 mm	1	1	1		1	1
Colour - Prints					32	
Slides	1460	150	310	230	1330	230
Movies 16 mm S.8 mm						1
Mounting Prints	30	7		20		9
Outdoor Jobs	3	2	1	1	4	1
Associated Activities	4	10	2	4	4	6
Completed Art for Teaching	85	59	402	139	42	93
Completed Art - Other Activities	10	11	1	5	8	15
Associated Activities	2	4	4	4	5	7
Projector Services	7	17	84	76	49	68
Associated Activities	6	18	13	53	29	20
Overhead Transparencies	20	18	59	200	49	
Associated Activities	1	2	2	10	11	11
Master Tapes	5	4	80	80	29	51
Tape Copies	44	222	1232	1915	1847	1821
Associated Activities	8	20	22	26	15	32

Three things follow from this. Firstly, C.A.T. is obviously providing a much needed and popular service. Secondly, there are obvious peaks in production and facilities must be geared to these peaks rather than to an average for a year. Thirdly, the use of audio visual aids is rapidly increasing. That the production will continue to increase is evident from the fact that almost 70% of our production is still (in June 1969) for first level courses despite the fact that many of these courses are now being taught for the third time. The view that most aids for first level courses would be used again and again seems to be incorrect. Courses rightly undergo continuous modification and there is also a fair amount of change in staff giving the courses, each new lecturer requiring a different and personally commissioned set of audio visual aids. There is no evidence that production of aids will decline even for courses already supplied with many such aids. This of course shows a healthy educational policy. Courses are under constant review, and so audio visual aids are under constant review. This does, however, imply continued development of the C.A.T. audio visual service.

CURRICULUM AND TEACHING METHOD

A Work Within the University

In its new accommodation in Building W6 the following facilities for work in curriculum and teaching method have been available since June 1968.

There is a general office for clerical work and for the processing and exchange of educational documents. There is a general-purpose teaching area that serves as a display room, seminar room, classroom and curriculum laboratory; and a smaller room for training courses, seminars and lectures. A small workshop has been functioning since January 1969 and is equipped with a basic set of hand tools. Two rooms are available for science education, a research laboratory and a curriculum and method laboratory. The science laboratory is equipped with a basic set of chemicals and apparatus as in a typical high school in N.S.W. Staff for development of curriculum and teaching methods is limited. At present (June 1969) the only member of teaching staff is the Director himself, and for this aspect of C.A.T.'s activities he is assisted by only one secretary Miss Betty Locke, appointed March 1968; a chief laboratory technician, Mr. David Griffiths, appointed

April 1968, and a junior laboratory assistant, Mr. Robert Stone, appointed March 1969.

The Centre, of course, has a secretary in charge of office management, Miss Annette Brown, appointed April 1967.

An important aim of the Centre is to help staff in the development of teaching skills. In 1968 a series of weekly seminars began on topics of relevance to university teachers. Topics included "The Lecture Method"; "Teaching in Small Groups"; "Evaluation of Student Progress" and "Matriculation and Selection for the University". Each seminar has been attended by about thirty members of staff and the series has provided a useful opportunity for the exchange of ideas on teaching problems.

The Centre also issues Bulletins, Teaching and Learning in the University, which give information on aspects of university education and in some cases, serve as the basis for discussion at seminars.

An informal advisory service is available for those members of staff who wish to discuss educational problems. This service is being used more intensively, especially by newly appointed members of staff.

In 1968, new members of staff were also assisted by means of a special course of lectures "An Introduction to Macquarie University". This course will be given each year as it seems to have been of great value to those staff attending.

Since 1967, C.A.T. has sponsored a number of lectures and seminars on educational topics by outstanding educators from outside the University, usually from overseas. This particular activity has been especially developed as a matter of policy since January 1969.

In January, Dr. Frances Stevens of the Leeds University Institute of Education lectured on principles of curriculum; in April, Dr. Beth Schultz from Western Michigan University talked about the Science Curriculum Improvement Study Programme in Berkeley; and in June, Dr. Ernest Burkman, Professor of Science Education at Florida State University, Director of the Intermediate Science Curriculum Study (ISCS), gave a stimulating lecture on his curriculum project. The next lecture in this series will be by Dr. Donald Parker of Columbia University, the senior author of the Science Research Associates (S.R.A.) reading materials widely used in Australian schools. His

topic will be 'Schooling for What?'. Some of these lectures were available to invited audiences from outside the University.

During 1967, 1968 and 1969 the Centre has co-operated with the School of Education in planning for and providing certain facilities for the Diploma strand of the B.A., Dip. Ed. programme. A particularly interesting aspect of work with the School of Education has been provision of the course "Science in the School" for people taking Master of Science programmes in the teaching of their subject. This course does not involve lectures but it does involve seminars. The programme is tailored for individual students who are required to develop original contributions to teaching. The staff of the Centre provides materials and advice but the projects are essentially the original work of the teachers. In 1969, projects undertaken by this group include specifications for a kit of apparatus for primary school science; a booklet on safety in the school laboratory; visual aids for teaching a topic in field geology; a bibliography on aspects of chemistry teaching; a resource unit for introducing atomic theory to Forms I - IV; the production of overhead transparencies for teaching astronomy and programmed lesson notes on a topic in chemistry. To satisfy the 'examiners', a project must reach a standard suitable for publication or mass production for distribution to the schools.

During 1967 and 1968, at a time when the School of Education had staffing problems, C.A.T. also arranged and supervised visits by evening students of Education to educational institutions in Sydney.

B. Work with Educational Institutions Outside the University

One of the published objectives of the Centre is "to develop co-operation with teachers in primary and secondary schools, and with appropriate officers of the State Departments of Education and of Technical Education and of other appropriate agencies".

This is a broad charter, but C.A.T. has in fact developed many links with educational institutions outside the University through development of new methods of teaching, in-service courses, exchange of information, by providing a consultancy service, by giving talks and seminars and by organising conferences and workshops on educational problems.

Our major effort during 1968 and 1969 was a research pro-

gramme for the development of audio-tutorials for teaching field biology in high schools. This has been a most successful undertaking and has given the Centre a valuable resource for work with secondary schools. A prototype system was developed under the supervision of Professor S.N. Postlethwait (Purdue University) who was based in the Centre for three months in 1968.

High school students were invited to use the audio-tutorial booths and by the end of December 1968, two hundred had worked through the system and completed a questionnaire and a series of tests designed to determine the effectiveness of audio-tutorials as a teaching method. The results are being analysed at the present time. Since then the booths have been used by Level 1 students from various high schools in the area. The booths have also proved to be of great interest to both educationalists and general visitors alike. In January 1969 the booths were demonstrated to Principals and Deputy Principals at their annual conference.

Another important link has been with the Syllabus Committee in Science for the Higher School Certificate. Since 1967 the Director has been a non-voting observer on the committee, a full member of the Third Level and Biology sub-committees, and a member of the examination committee. At present the Director is helping a sub-committee of the Science Syllabus Committee to arrive at a statement of objectives of science teaching.

The Director has, since 1967, been active as a consultant in science education for A.N.Z.A.A.S., helping various committees plan symposia and public lectures on aspects of science education. Similarly, work has been done through the Education Committee of the Australian Conservation Foundation, to construct courses of study in conservation and to produce educational materials promoting conservation.

The Centre has also been active, recently, in the field of Health Education. In June, the Director lectured on the principles of curriculum to a conference on Health Education at Narrabeen. The Director has also represented the University on a committee organising the 29th International Congress on Alcoholism and Drug Dependence to be held in part at Macquarie next February. He has also been invited by the N.S.W. Health Department to advise on the production of materials for schools on health education.

C A.T. is especially pleased to have been associated with two very successful annual programmes for secondary school pupils organised

by the School of Modern Languages - The German 'Teach-In' in January, and 'La France en son et lumiere' in June. These have been successfully given in 1967, 1968 and 1969. For the German programme the Centre's role was administrative, issuing invitations and enrolling students. For 'La France en son et lumiere', the Centre helped directly by producing and making many of the audio-visual aids and by giving other technical assistance.

During 1967 the Centre began a system of correspondence with educational clearinghouses; centres of research and development; bibliographical services; curriculum projects; testing services; university departments of education; ministries of education and the like. Reports, newsletters, bulletins and associated publications from these centres have been requested and the Centre now has the beginning of a valuable collection of resource material on educational communications; testing and evaluation; teaching method; curriculum; and international education at all levels.

By June 1969 the collection of educational documents had reached about 5,500. This has proved a valuable and unique collection of courses of study, research findings, and educational statistics from key educational institutions throughout the world. It is proving a valuable resource for work in curriculum and educational planning. In addition, the Director maintains direct links with education in developing countries through work with UNESCO. Last year he was in India as a Consultant for the UNESCO Science Teaching Project in that country; he is at present under contract to UNESCO to evaluate certain materials produced by the vast Biology for Africa project, and later this year he goes to Mauritius as a Consultant in Science Teaching.

Since 1967 the Director has personally visited the Director General of Education in each state of Australia for discussions on the development of C.A.T., and he has also visited many schools, teachers colleges and other educational institutions.

An 'Open Week' was arranged for 1st - 5th April 1968 shortly after the Centre moved into its new premises. Invitations were issued to members of staff, teachers in primary and secondary schools, school inspectors, and other educational groups. Exhibits were arranged by the various groups within the Centre.

During this week a number of manufacturers of audio-visual

aids text books, programmes and other educational materials, were invited to mount exhibitions of their materials. Fourteen firms participated in this exhibition and arranged varying displays which would be of interest to teachers and University lecturers in Arts and Science. These included projectors, epidiascopes, overhead projectors, screens, equipment for closed circuit television copying machines, films, single concept loops, strip films, automatic and manual slide viewers, movie cameras, teaching machines; text books, media boards' for developing audio-tutorials , laboratory type learning materials and teaching systems for individualised instruction in the basic skills from kindergarten to University.

The displays proved to be most successful. Approximately five hundred people visited the Centre during 'Open Week' and most expressed appreciation at being able to view such a wide collection of teaching aids at first hand Many contacts were also made with key educators.

This 'Open Week' has resulted in many lasting contacts between the Centre and other institutions, particularly commercial, industrial and armed-service organisations.

Since 1967 the Director has also given many addresses and talks to educational organisations such as the Australian College of Education, the Secondary Principals Conference, the Institute of Inspectors, the Science Teachers Association, and to groups in schools and training colleges.

One trend of special satisfaction to the Centre is a marked increase in the number of people who come individually for discussion and consultation These include teachers from pre-primary, primary and secondary schools technical education, and from services education, as well as educators from industry, the publishing world, teachers associations, teacher training institutions, and from other Universities. These people sometimes establish lasting links with the Centre, returning from time to time for further discussion or to use our curriculum laboratories and other facilities.

IN-SERVICE TRAINING OF TEACHERS IN SECONDARY SCHOOLS

Clearly the public lectures organised and materials produced by C.A.T. makes some contribution to the in-service training of teachers; but the major effort in this regard has been through short-term courses in various subjects, especially in science.

These have been organised in three ways. (1) Held at the University independently by certain schools of the University. (2) Held at the University and organised directly by C.A.T. with the co-operation of the In-Service Division of the N.S.W. Department of Education and, (3) held away from the University and given by the Director personally.

Apart from three courses run co-operatively with the School of Biology and one with the German section of the School of Modern Languages, all C.A.T. courses for teachers have been conducted away from the University by the Director. At times he has also contributed to courses sponsored by other educational agencies. Examples of courses given away from the University since 1967 are as follows :

January 1968	A one week course at Newcastle Teachers College on 1st Level Biology for the Higher School Certificate
February 1968	A two day seminar in Tamworth for teachers on curriculum reform in science
April 1969	Contributions to Annual Conference of the Catholic Secondary Schools Science Association
June 1969	Two day course for teachers in the Bowral district on the techniques of field biology

Related to this work is the development of close links with teachers colleges. The Teachers' Guild has sought our advice and help with in-service training programmes for teachers in Independent Schools, and a co-operative programme is to be given in July 1969. Students have visited the Centre from the School of Education, Queensland University, and from Balmain Teachers College. Various members of staff from Sydney and Alexander Mackie Colleges have visited the Centre for consultations.

RESEARCH

At present the Director is the only member of teaching staff and it has not been possible to undertake a great deal of original research.

Two major studies, however, have been undertaken. (1) The Director was able to complete an investigation of pupils reactions to the new Nuffield Science Teaching Projects in England begun before he accepted his present position at Macquarie. The results of this study have been received most favourably by the Nuffield Foundation and are currently being

prepared for publicat on. (2) C.A.T. has supervised a study of school pupils' attitudes towards audio-tutorials. This work is nearing completion and will be available for publication by 1970. Other aspects of research on audio-tutorials are planned.

At a different level some small investigations or 'action resear h projects' have been undertaken to solve immediate educational problems. In February 1969 the Director helped a sub-committee of the University Education Committee with an investigation into student enrolment procedure.

Constant action research is underway in the Centre to find techniques for improving the quality of visual aids and developing devices for using the aids most effectively.

Small sample surveys have been completed for sub-committees of the Science Syllabus Committee to assess reactions of pupils and teachers to the new science courses in high schools.

There is, however, urgent need for research staff to undertake both 'academic' and 'action' type research into many aspects of education.

GENERAL CULTURAL ACTIVITIES

As a general cultural service to the University, the Centre sponsors weekly screenings of documentary films and programmes of recorded music. These two services, it is anticipated, will gradually be taken over by the students themselves as the University grows larger and develops more varied teaching programmes.

During 1968 the Centre sponsored an Art Club for members of staff and in 1969 a Camera Club was established and has proved to be popular and successful.

STAFF OF THE CENTRE AS AT JUNE 1969

		Position	Appointed
A.	Teaching Staff		
1.	Dr. G.R. Meyer	Director	1st January 1967
B.	Clerical Staff		
1.	Miss Annette Brown	Secretary	17th April 1967
2.	Miss Betty Locke	Secretary	11th March 1968
3.	Miss Pamela Noble	Junior Typist	1st April 1968
C.	Technical Staff		
1.	Mr. R.C. Taylor	Photographer-in-Charge	17th July 1967
2.	Mr. G. Heath	Photographic Assistant	18th March 1968
3.	Mr. D. Griffiths	Chief Laboratory Technician	1st April 1968
4.	Miss Betty Thorn	Artist	8th April 1968
5.	Mr. H.E. Newton	Audio Technician	22nd April 1968
6.	Mr. N. Waddy	Projectionist	21st October 1968
7.	Mr. R. Stone	Laboratory Assistant	3rd March 1969
8.	Miss Barbara Tanswell	Audio Assistant	10th March 1969
9.	Miss Irene Ahrens	Junior Artist	17th March 1969
10.	Mr. C. Richards	Projectionist	31st March 1969
11.	Mrs. Colleen Anderson	Photographic Assistant	8th April 1969
12.	Miss Gail Saunders	Artist	2nd June 1969

PUBLICATIONS OF THE CENTRE

Bulletin

No 1 Teaching in Small Groups

No 2 Audi Tutorials in University Teaching

No 3 Academics, Administrators and Librarians

No 4 The Art of Lecturing

No 5 The Teaching of Practical Science

No 6 Evaluating Student Progress : Part I

No 7 Evaluating Student Progress · Part II

Reprints

No 1 Macquarie University Establishes a Centre for Advancement of Teaching

No. 2 Senior School Science Courses Discussed at Ma quarie University

No 3 Population Ecology in the Science Course for the Higher School Certificate in N.S.W.

No 4 Some Developments in the Improvement of Teaching and Learning in Universities and Colleges in the United States

No. 5 Changing the Curriculum. Developments in two Regions: United States and East Africa

No 6 An Appeal to Students in New South Wales - 'Science for All in the Senior Years of High School

No 7 Science Education : New Links between Schools and University

No 8 Some Notes on Attitude to First Experiences of Programmed Instruction

Film Lists

No 1 November - December 1966

No 2 January - April 1967

No. 3 May - June 1967

No. 4 July - August 1967

No. 5 September - December 1967

No. 6 January - April 1968

No. 7 May - August 1968 (in preparation)

No 8 September - December 1968 (in preparation)

Other Publications

The Centre has issued the following notes and reports:

1. C.A.T. Resources for Staff - 1969
2. Some Notes on Overhead Projectors (G.R. Meyer)
3. The Efficiency of Lecturing (An abstract prepared by the Education Department Victoria)
4. Time for Microcourses? (S.N. Postlethwait Purdue University)
5. Three Months as Consultant for the UNESCO Secondary School Science Teaching Project for India September to November 1968. A report to Division of Curriculum and Research, Department of Educational Methods and Techniques of Teacher Training, UNESCO (G.R. Meyer)
6. A report to the Nuffield Foundation of an Investigation Completed with the aid of a Nuffield Foundation Special Study Grant, March to August 1966 (G.R. Meyer)

Information about activities of the Centre is also published from time to time in Macquarie University News.

PUB ICATIONS BY HE DIRECTOR SINCE APPOINTMENT JANUARY 1967

1 Objective Tests in Science (ith R. Cull and K.S. McDonnell). Jacaranda Press, Brisbane, 1967, 380 p.

* 2 Macq arie University Establishes a Centre for Advancement of Teaching. Educatio News Vol. 11 No. 4 (August 1967), 3 5.
Also reprinted in The Education Gazette Vol. LXII No. 5 (May 1968), 211-215.

* 3 Senior School Science Courses Discussed at Macquarie University. Science Education News Vol. 16 No. 2 (August 1967), 63-66.

* 4 A Further Note on the Symposia at Macquarie University on Senior Science Courses. Science Education News Vol. 16 No. 3 (November 1967), 56-57.

* 5 The Ecology Strand of the Fifth and Sixth Year 2F and 2S Science Syllabuses in N.S.W. Science Education News Vol. 16 No. 3 (November 1967), 22-29.

* 6 Changing the Curriculum. Developments in two Regions: United States and East Africa. Australian Teacher Vol. 43 No. 2 (December 1967).

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* 8 Science Education : New Links between Schools and University. Science Education News Vol. 17, No. 1 (May 1968), 4-8.

9 Some otes on Atti ude to First Experiences of Programmed Instruction (with J W Akers, J.W. Angus and Brother J.T. Joyce). Programmed Instruction and Educational Technology V 1. 3 No. 2 (October 1968), 106-11
Also reprinted in T e Education Gazette Vol. LXIII, No. 4 (May 1969), 220-224

10 Pre-School Education and the Centre for Advancement of Teaching. Australian Pre-School Quarterly Vol. 9 No. 2 (November 1968), 12-14.

11 Practical Work in Biology (with N.W. Buckingham, E.D. Clarke, M.I. Shiel and E.R. Sakker). Specially adapted United Kingdom edition published by Frederick Warne & Co. Ltd. 1968.

12 The Role of Audio-Tutorials in Technical Educa ion. The Australian Technical Teacher Vol. 1 No. 1 (June 1969), 13-19.

13 Environmental Science -An Experiment in Science Curriculum in New South Wales. School Science (September/December 1968), 210-215.

* These articles have been published by C.A.T. in its Reprint Series